

Derwood Station South and Flower Valley Stormwater Pond Retrofit Projects

Public Meeting: April 12, 2017



DEPARTMENT OF
**ENVIRONMENTAL
PROTECTION**
MONTGOMERY COUNTY • MARYLAND

Working together for a cleaner, greener
economically vibrant community



Introductions

Michael Perkins

Project Manger (Consultant), DEP

Paul Bogle

Senior Engineer, DEP

Matthew Ernest, P.E.

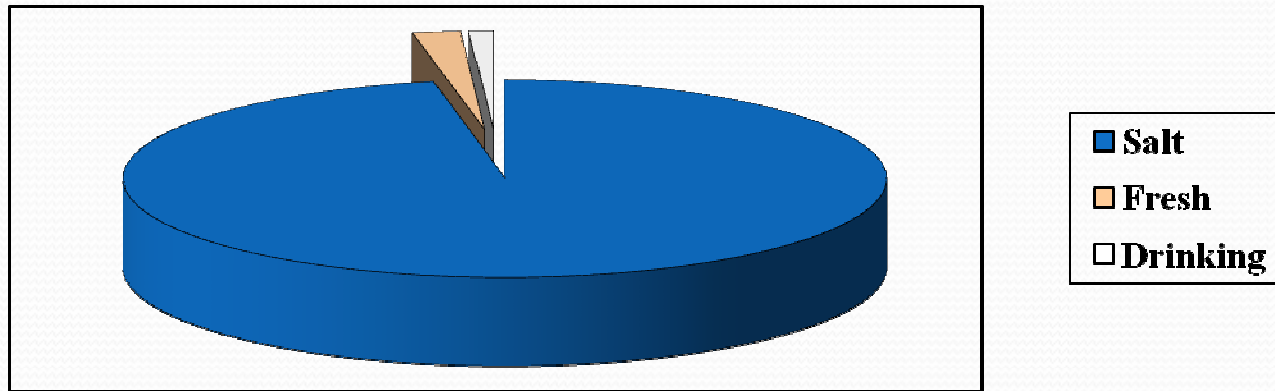
Associate/Water Resource Engineer, A. Morton Thomas and Associates



Tonight's Agenda

- Sources of water
- Montgomery County background
- What is a watershed?
- Introduction to stormwater runoff
- What the County is doing to protect our waterways
- Project goals
- Proposed pond retrofit designs
- Examples of similar projects
- What to expect during construction
- Project schedules
- Questions/Comments

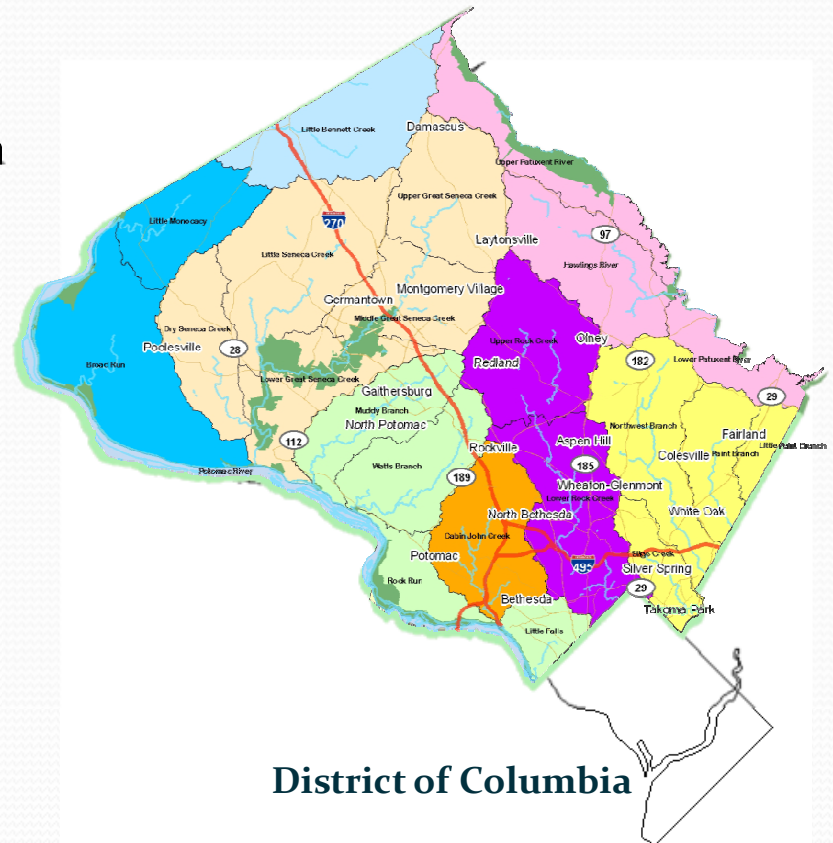
Sources of Water



- About 97% is salt water
- About 2% is fresh
- Only 1% is available for drinking water
 - 95% from groundwater across the Country
 - 32% from groundwater, 68% from surface water in Maryland
 - Potential for greater impacts from runoff in Maryland

Montgomery County, MD

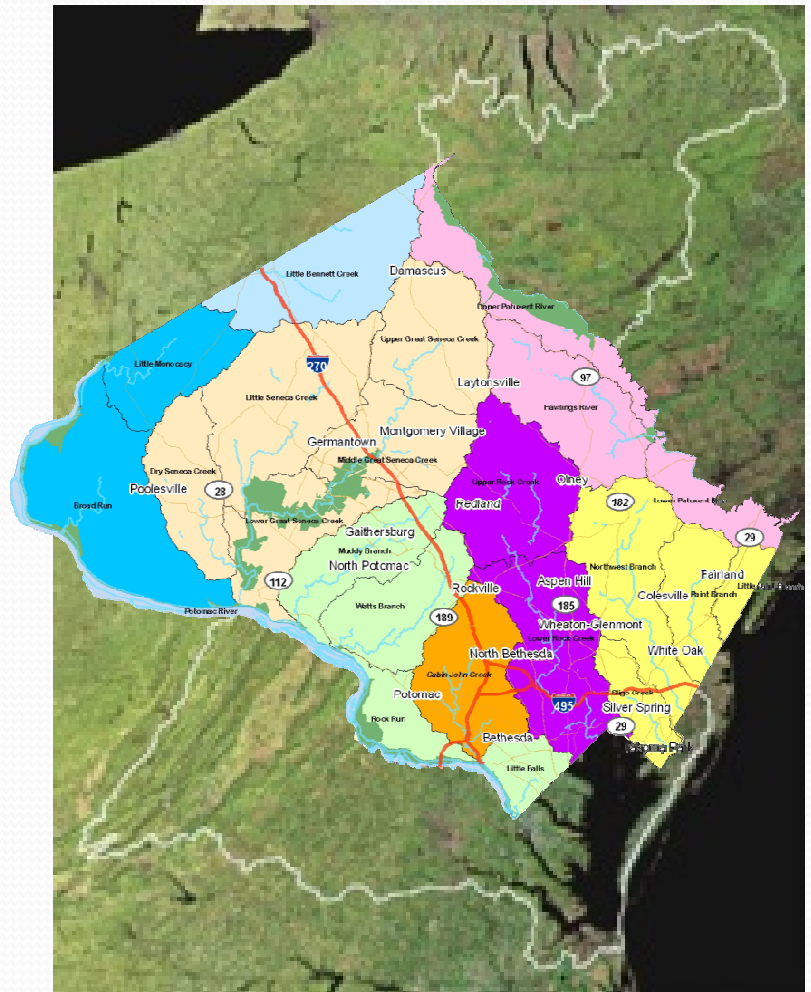
- Over 1,000,000 people
 - Second only to Baltimore City within Maryland in average people per square mile
- 500 sq. miles
- About 12% impervious surface overall
 - About the size of Washington DC
- Over 1,500 miles of streams
- Two major river basins:
 - Potomac
 - Patuxent
- Eight local *watersheds*



Impervious: Not allowing water to soak through the ground.

What is a Watershed?

- A ***watershed*** is an area from which the water above and below ground drains to the same place.
- Different scales of watersheds:
 - Chesapeake Bay
 - Eight local watersheds
 - Neighborhood (to a storm drain)



What is Runoff?

Water that does not soak into the ground becomes surface runoff. This runoff flows over hard surfaces like rooftops, driveways and parking lots collecting potential contaminants and flows:

- **Directly into streams**
- **Into storm drain pipes, eventually leading to streams**
- **Into stormwater management facilities, then streams**

Two Major Issues:
Volume/Timing of Runoff
Water Quality

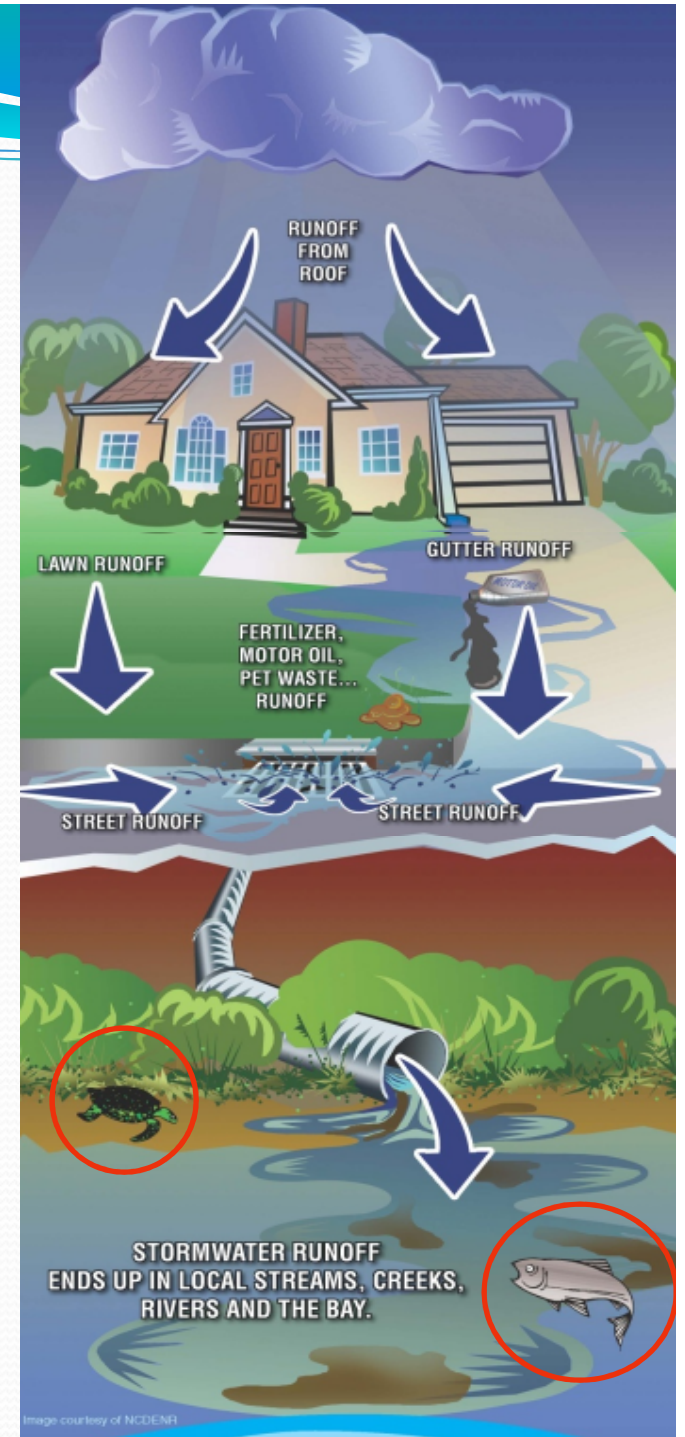
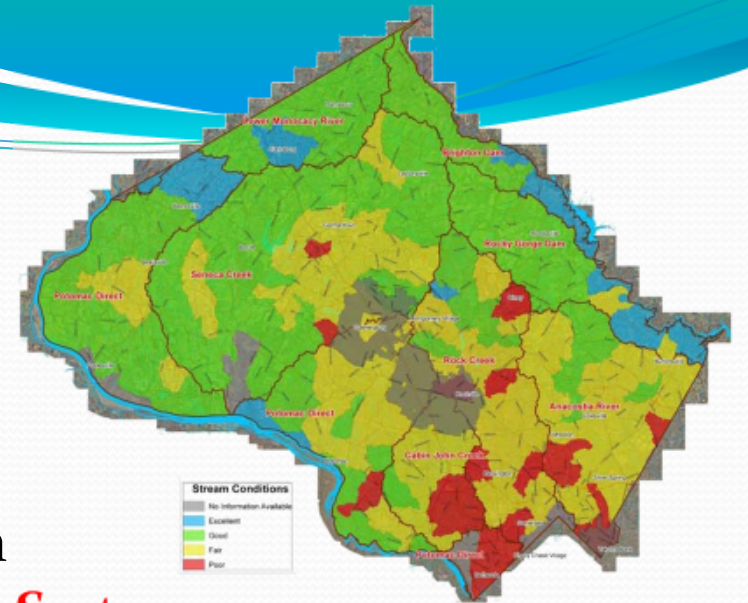


Image courtesy of NCDENR

What is the County doing to protect our Streams?

- Must meet regulatory requirements
 - Federal Clean Water Act permit program
 - **MS4 = Municipal Separate Storm Sewer System**
- Applies to all large and medium Maryland jurisdictions
- County programs
 - Restore our streams and watersheds
 - Add runoff management
 - Meet water quality protection goals
 - Reduce pollutants getting into our streams
 - Educate and engage all stakeholders
 - Individual actions make a difference
 - Focus on watersheds showing greatest impacts





MS4 permit, what is it?

- Montgomery County is responsible for:
 - What goes into our storm drain pipes
 - What comes out of them
 - What flows into the streams
- Requires additional stormwater management for **20 percent** of uncontrolled impervious surfaces (3,778 acres)



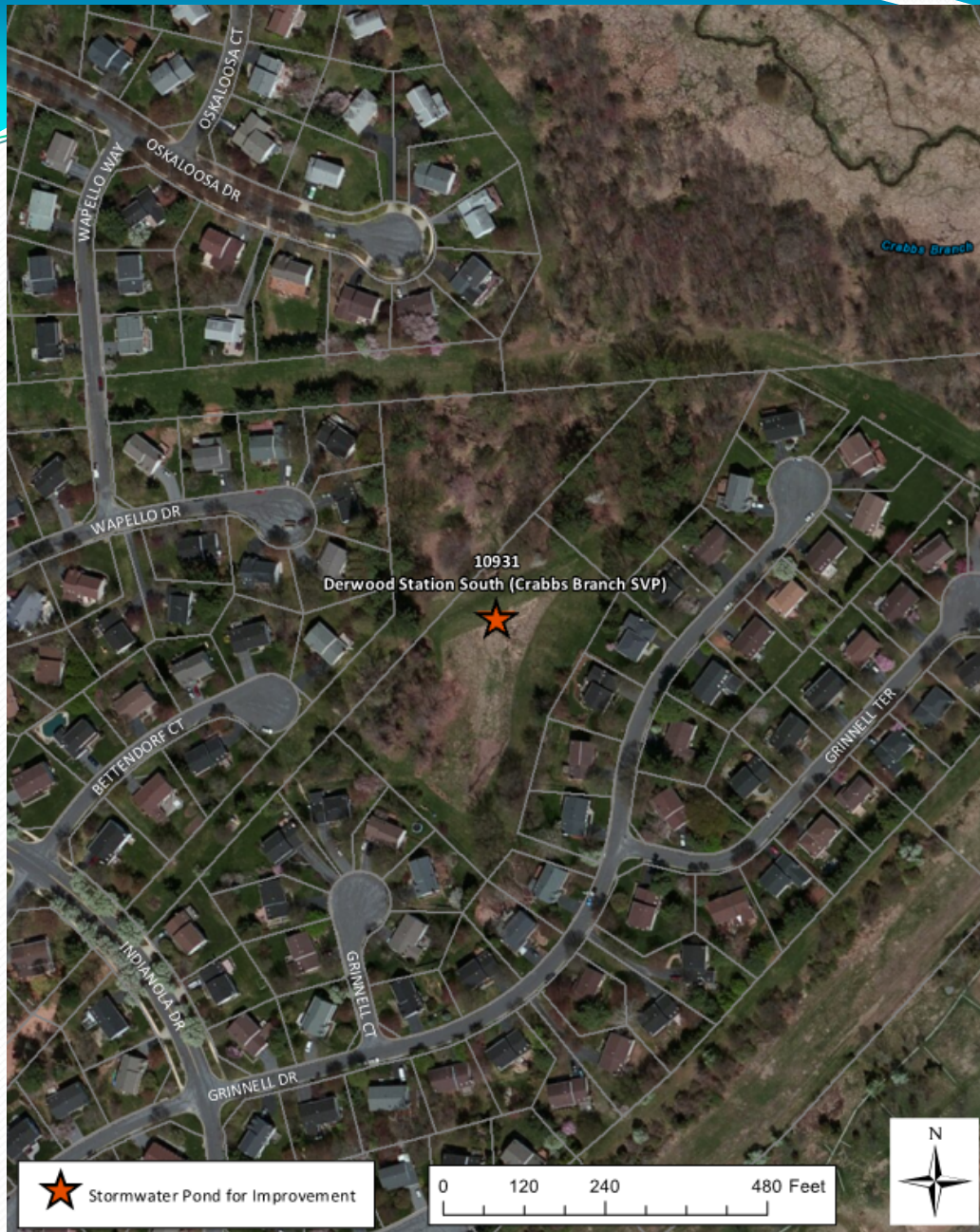
Design Goals for Ponds

- Channel Protection Volume (CPV)
 - Designing a pond to capture 2.6 inches of rain (a 1-year storm event)
 - Storing and slowly releasing this rain event for 12 to 24 hours
 - Main Objective for this Design: Provide the greatest impact to reduce downstream erosion
- Water Quality Volume (WQV)
 - Capturing and filtering out the pollutants during a 1-inch rain event, and is based on impervious area
 - Main Objective for this Design: Reduce nutrients from entering the stream
- Ideal Situation
 - Design a facility that does both with the land area being the only limiting factor



Goals of the Projects

- Create a permanent pool to capture nutrients and provide water quality treatment (full Water Quality Volume, WQv))
- Capture “peak-flow” runoff from impervious surfaces within the stormwater pond (Channel Protection Volume, (CPv))
- Enhance site aesthetics
- Retrofit or replace existing structures

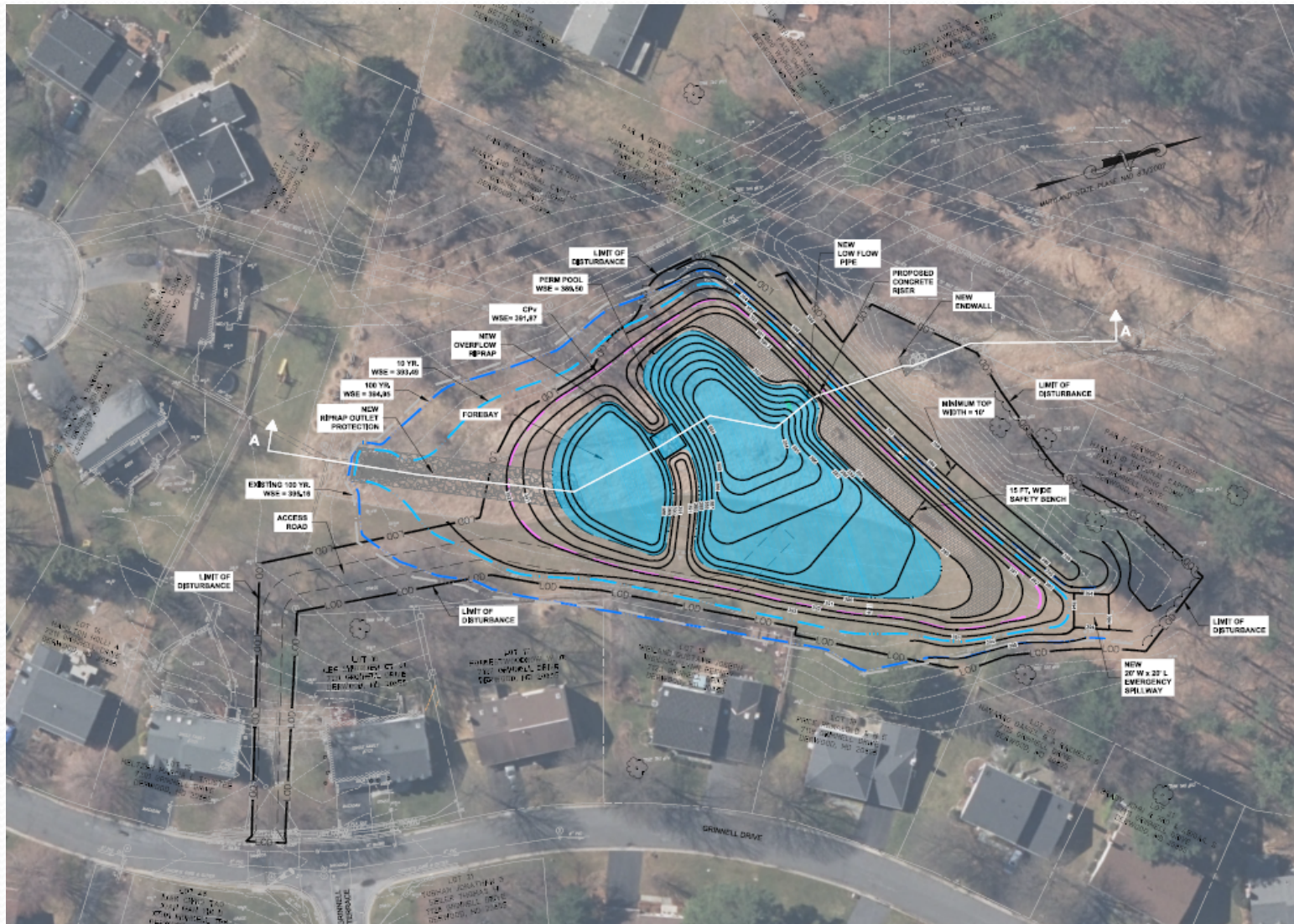


Derwood Station site vicinity map

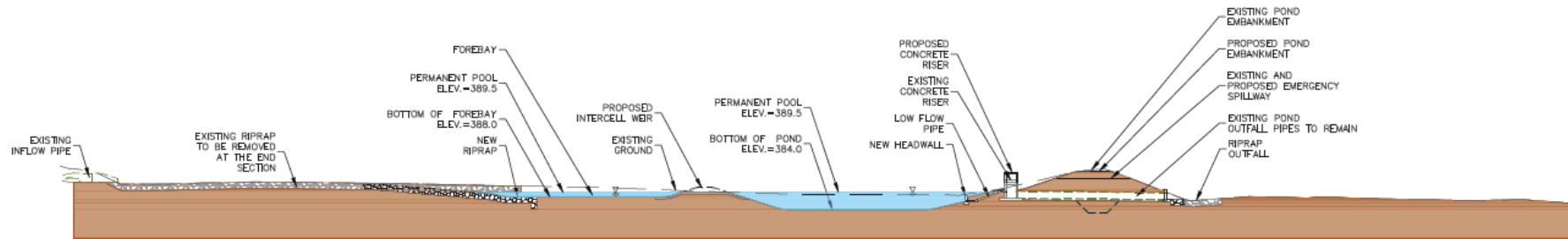
Derwood Station Stormwater Pond Site Photos



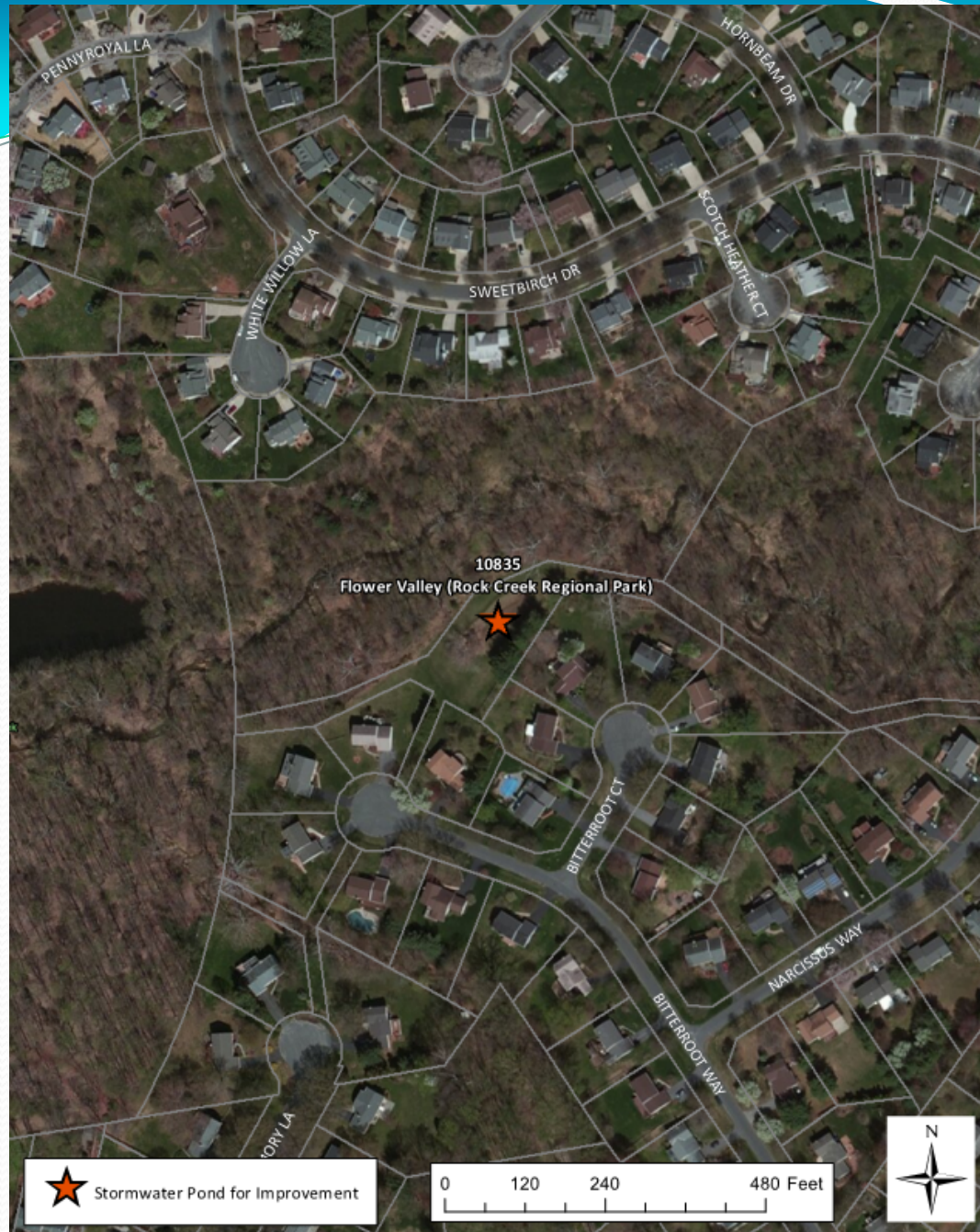
Derwood Station Proposed Pond Design



Derwood Station Proposed Pond Design



SECTION A-A

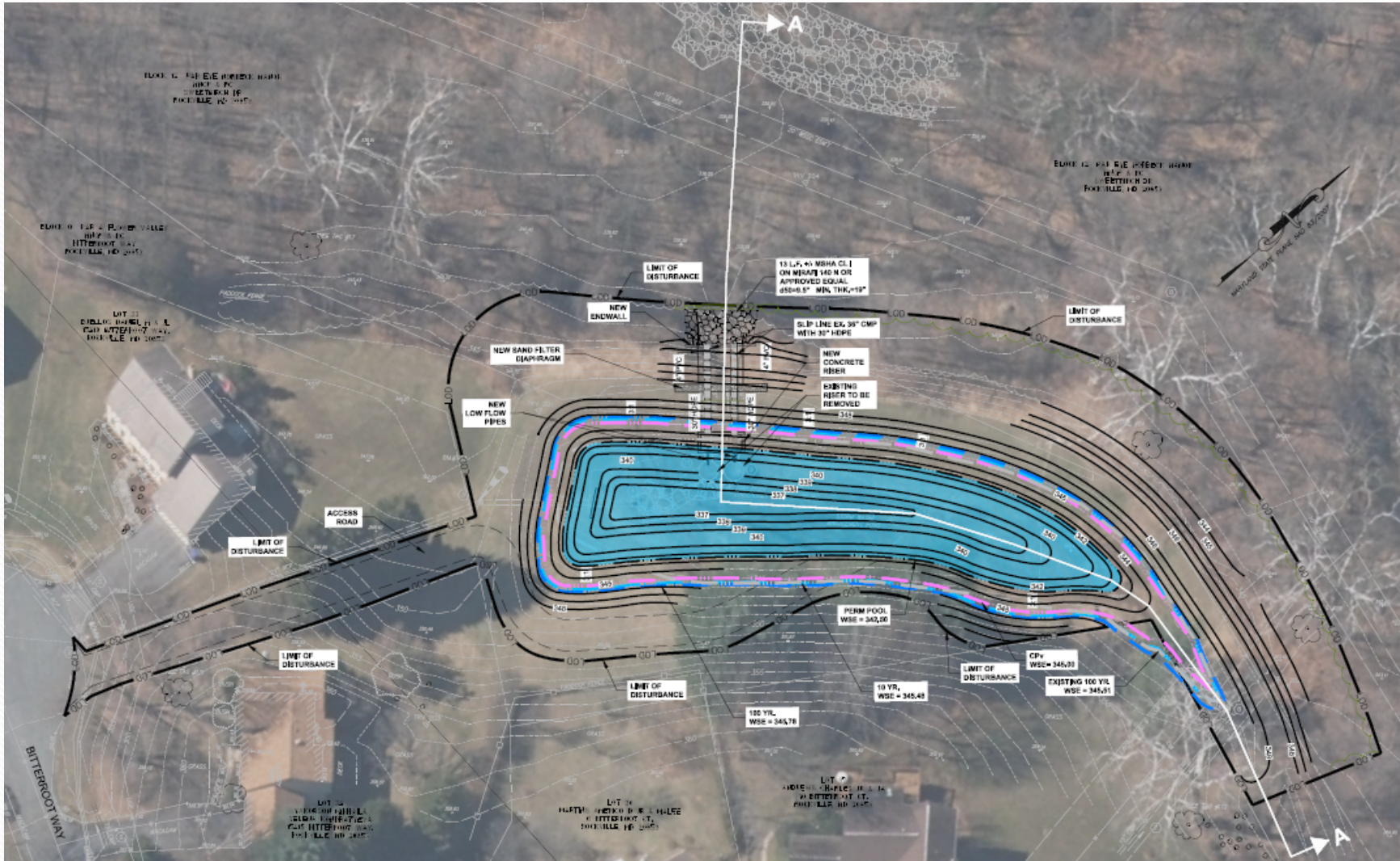


Flower Valley site vicinity map

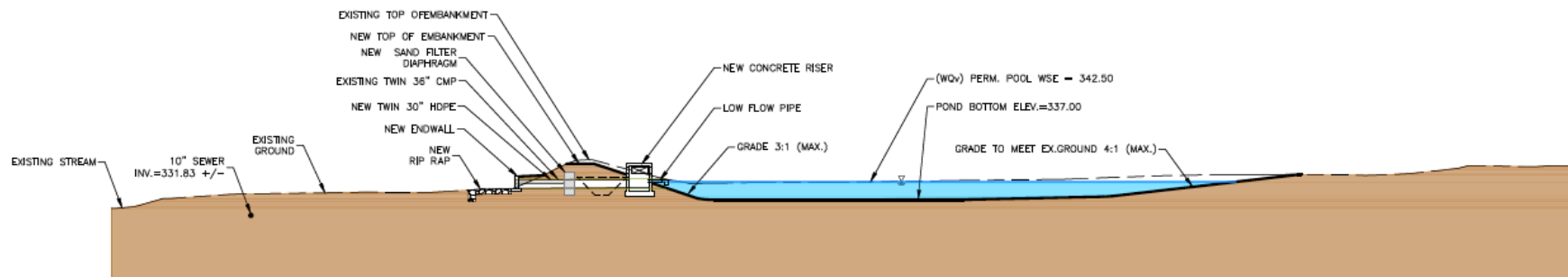
Flower Valley Stormwater Pond Site Photos



Flower Valley Proposed Pond Design



Flower Valley Proposed Pond Design



SECTION A-A

Examples of wet pond retrofits



In Construction



1 Year After Construction



5 Years After Construction



5 Years After Construction

Vegetated pond fringe examples



Aquatic vegetation provides buffer between the water's edge and adjacent land



Native plant species foster aquatic ecosystem development within pond

What to expect during construction

- **Duration**
 - Approximately 4-6 months (weather dependent)
- **Construction Hours**
 - Monday through Friday, 7AM – 4PM
- **Safety**
 - Work limits will be fenced with high visibility orange construction safety fence
- **Traffic**
 - **Derwood Station**: access off Grinnell Drive
 - **Flower Valley**: access off Bitterroot Way
- **Noise**
 - Contractor is required to comply with Montgomery County Noise Ordinance
- **Sediment**
 - Contractor will be required to comply with Montgomery County Sediment Control Permit and not track dirt onto roads





Schedule

Derwood Station and Flower Valley Stormwater Pond Retrofit Projects

- Preliminary Site Assessment – Fall 2015
- Public meeting to discuss concept designs– 4/12/17
- Revise Design Plans – Fall 2017/Winter 2018
- Public Meeting to discuss final designs – Fall 2017
- Permits issued – Fall 2018
- Construction – Fall 2018/Winter 2019



Questions/Comments?

Michael Perkins

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Derwood Station Project Page:

<https://www.montgomerycountymd.gov/water/restoration/derwood-station-south.html>

Flower Valley Project Page:

<https://www.montgomerycountymd.gov/water/restoration/flower-valley.html>